



**ES-221  
HIGH TEMPERATURE  
EPOXY  
SURFACE COAT  
FOR PLASTIC FACED  
PLASTER APPLICATIONS**



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**DESCRIPTION**

ES-221 is a hydrophobic epoxy system (cures in the presence of water) engineered primarily for use as a high temperature surface coat for plastic faced plasters or high temperature molds requiring a high-gloss surface. Available in white resin for easy viewing of scribe lines on PFP masters or black resin for RTM or contact molding applications requiring a high-gloss finish. The versatility of this room temperature cure, 300°F (149°C) high temperature capable system (see post cure schedule), provides the engineer with a wide range of applications. Popular handling properties producing accurate, detailed, chip resistant surface coat duplications in epoxy laminate or cast tool fabrication. **Typical applications include: Plastic Faced Plasters, Vacuum Molds, Checking Fixtures, Duplication Molds, Spotting Racks, Bonding Fixtures and RTM Molds.**

**TYPICAL HANDLING CHARACTERISTICS @ 77°F (25°C)**

Mix Ratio (parts by weight) .....	100R/13H
Work Life (226 gram mass) .....	22 minutes
Mixed Viscosity .....	16,800 cps
Mixed Volumetric Density .....	12.4 lbs/gallon
Specific Gravity .....	1.49 g/cc
Cure-To-Demold .....	8-16 hours
Complete Cure .....	refer to recommended oven cure schedule on page 2
Resin Color .....	White or Black
Hardener Color .....	Amber
Mixed Color .....	White or Black
Shelf Life ES-221 Resin (in original unopened container) .....	2 years
Shelf Life ES-221 Hardener (in original unopened container) .....	2 years

**TYPICAL PHYSICAL PROPERTIES (Cast Bar)**

Tensile Strength .....	7,591psi (52MPa)
Tensile Elongation .....	1%
Flexural Strength .....	13,998psi (97MPa)
Flexural Modulus .....	740,800psi (5,108MPa)
Compressive Strength .....	17,120psi (118MPa)
Izod Impact Strength .....	5.8 (ft-lb)/ft
Hardness .....	90 Shore D
Heat Deflection Temperature @ 264 psi .....	225°F (107°C)
Heat Deflection Temperature @ 66 psi .....	230°F (110°C)

**APPLICATION GUIDE**

***Proper Preparation Of Model Or Pattern Surface***

Note: A porous surface needs to be completely sealed before a mold release is applied. Whichever sealer you choose to use you should refer to sealer instructions regarding number of coat applications and dry-to-cure-times before applying mold release.

Note: A non-porous surface should be thoroughly cleaned before applying mold release. Refer to application instructions of mold release.

Once your model or pattern are properly released, catalyze ES-221 surface coat and brush on a 0.030" to 0.040" coating, taking care not to entrap air or puddle resin in corners or at the bottom of steep details.

When surface coat reaches "tack-stage" (resin will not stick to your finger when touched but soft and sticky enough to leave fingerprint) immediately brush on a second layer of catalyzed ES-221 surface coat to a thickness of .030" to .040", followed by the pouring of plaster onto wet surface coat, filling cavity.

NOTE: Prior to pouring of plaster, some fabricators prefer to sprinkle or broadcast sisal fibers on to 2<sup>nd</sup> wet surface coat to secure a mechanical bonding feature.

**POST CURE SCHEDULE**

- 16 – 24 hours @ 77°F (25°C)
- +2 hours @ 150°F (66°C)
- +2 hours @ 200°F (93°C)
- +2 hours @ 250°F (121°C)
- +2 hours @ 300°F (149°C)

NOTE: The post cure schedule pertaining to the high-temp epoxy laminate, casting system or plaster used with your tooling surface coat would have precedence over that of the surface coat. However, to attain suitable temperature resistance and chemical resistance, the surface coat is recommended to be post cured to a minimum temperature of 200°F (93°C).

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